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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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7590 02/20/2009				
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EXAMINER				
KRUER, KEVIN R				
ART UNIT		PAPER NUMBER		
1794				
MAIL DATE		DELIVERY MODE		
02/20/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/600,590

Applicant(s)

ASPAR ET AL.

Examiner

KEVIN R. KRUEER

Art Unit

1794

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-17, 35, 51, 52 and 54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-17, 35, 51, 52 and 54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 July 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____
- Page No(s)/Mail Date 8/13/08

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 13-17, 35, 51, 52, and 54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what is meant by "bonded...by molecular adhesion."

Claim Rejections - 35 USC § 102

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 13-17, 35, 51, 52, and 54 are rejected under 35 U.S.C. 102(b) as being anticipated by Bisaro et al (US 5,141,894).

Bisaro teaches a compliant substrate as depicted in Figure 4d. The laminate comprises a substrate (10), a monocrystalline zone (13) made by implanting ions through the substrate (col 4, lines 64+), a preliminary layer (11) on said monocrystalline zone (col 4, line 52+), an epitaxial growth layer (16) on said preliminary layer (col 5, lines 12+) which can be ion implanted (15), and a final layer of epitaxial growth layer (17) comprising GaAs. Ion that can be implanted include Mn, Al, Si, Cr, Fe, Ni Co, Cu, Ge, Sn, Zn Cd, Ti C, Cl, B, Ar, P, Le, Au, Ni, oxygen, hydrogen, fluorine, Si, Br, and S

(col 3, lines 37+). The layers may comprise crystalline, semiconductor materials such as silicon, germanium, or the like (col 6, lines 34+). As the laminate is used as a compliant substrate for epitaxial growth, said microcrystalline zone and/or microcavities are understood to absorb in whole or in part the stresses brought to said compliant substrate.

With regard to claim 35 and the claims that depend therefrom, the ion implantation of the substrate reads on the claimed "bonding interface" of claim 35. The ion implantation of the substrate is taught to create anchoring points that are centered at a depth R_p and having a width of $2.35X R_0$ (col 3, lines 46+). The epitaxial growth layer reads on the claimed "thin layer" of claim 35. Said layer is herein understood to be "bonded...by molecular adhesion" because the layers would delaminate if there was not molecular adhesion present. The claimed "intermediate layer" of claim 15 is met by the preliminary layer (11). Bisaro teaches the intermediate layer may be made from GaAs (see Fig 4d), arsenic, gallium, Si, or a number of other materials (col 4, lines 57+). Since the layer is amorphous, the examiner takes the position it is inherently "non-homogeneous." The examiner notes said intermediate layer may be formed directly on the substrate (Fig 4a) and the bonding interface is located between the thin layer and the intermediate layer (see 4d).

With respect to claim 13, the bonding energy between the epitaxial growth layer (16) (which reads on the claimed "the thin layer") and the epitaxial growth layer (17) is altered by ion implantation. Ion implantation is known to affect the surface's roughness that would read on the claimed "defects."

Response to Arguments

Applicant's arguments filed 9/26/2008 have been fully considered but are not persuasive. Applicant's arguments with respect to the 35 U.S.C. 112, first paragraph rejection are sufficient to overcome the written description rejection. Specifically, the limitation is supported on page 5, line 1 to page 6, line 30 of the specification.

However, said disclosure is insufficient to overcome the pending 35 U.S.C. 112, second paragraph rejection. Specifically, the disclosure contains no description of what is meant by "bonded...by molecular adhesion." Furthermore, the term did not have an art-accepted definition at the time the invention was filed. While applicant tries to equate molecular adhesion with wafer bonding, no such disclosure appears in the original disclosure and said terms are not synonymous in the art.

REJECTION UNDER U.S.C. 102

With respect to the rejection of claims 13-17, 35, 51, 52, and 54 as being anticipated by Bisaro, Applicant argues the examiner incorrectly equates epitaxial growth layers with a layer bonded by molecular adhesion. Specifically, applicant argues an epitaxial layer is "grown" on the substrate whereas molecular adhesion takes two or more structures and "bonds" them together in intimate contact. Said argument has been considered but is not persuasive because applicant has presented no evidence to support their characterizations of either "bonding" by molecular adhesion or epitaxial growth. Applicant is reminded that counsel's argument cannot take the place of

evidence. Furthermore, the original disclosure does not contain a definition for “bonding” or “molecular adhesion” that would exclude the epitaxial growth layer of Bisaro. Said terms are also not understood in the art to exclude the epitaxial growth layer of Bisaro.

Applicant also argues the claims do not require the materials bonded by molecular adhesion be (1) crystalline or (2) have close lattice constraints. Said argument has been fully considered but is moot because applicant fails to argue the crystalline, lattice matched layers of Bisaro would be excluded/outside the claim language.

Applicant further argues that molecular adhesion corresponds to three types of surface forces acting between two solids in sufficient proximity. Applicant argues the epitaxial layer of Bisaro fails to read on said surface forces but fails to explain how the layers are held together in absence of said forces. Thus, applicant has failed to sufficiently demonstrate Bisaro fails to anticipate the claimed subject matter. Specifically, Applicant has failed to show Bisaro’s epitaxial growth layer is bonded to the substrate by forces other than the three types of surface forces noted by applicant.

For the reasons noted above, the rejections are maintained.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEVIN R. KRUEER whose telephone number is (571)272-1510. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on 571-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kevin R Krueer/
Primary Examiner, Art Unit 1794